

**CLAIMS:**

1. A computer implemented method for optimizing an IT business infrastructure and business process parameters according to predetermined business objectives, the method comprising:
  - 5 (a) obtaining as input business objectives; and
  - (b) optimizing the IT business infrastructure and/or business level components associated with the IT business infrastructure according to said business objectives.
- 10 2. The method according to claim 1, further including:
  - (a) continuously monitoring the IT business infrastructure during run-time;
  - (b) determining whether a reference optimization of the IT business infrastructure and business level components needs updating; and
  - 15 (c) if so, updating the reference optimization of the IT business infrastructure and business level components according to the business objectives.
3. The method according to claim 1, wherein the business objectives include a service level agreement between a service provider that provides a service and a  
20 service consumer, regarding some service level.
4. The method according to claim 3, wherein the service level agreement has two numerical quantities associated therewith: a price paid by the service consumer to ensure the service level agreement, and a penalty paid by the service consumer  
25 whenever the agreement is violated.
5. The method according to claim 3, wherein the business objectives include a contract relating to an obligation by or to an owner or user of the IT business infrastructure.

6. The method according to claim 1, wherein the business model includes a system user behavior model that models behavior of users of a business application running on the IT infrastructure.

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7. The method according to claim 1, wherein the system user behavior model takes into account parameters such as the number of users, the types of users, and the manner in which each user uses the system.

10 8. The method according to claim 1, wherein the business model includes a system model that models hardware and software components of the IT infrastructure.

9. The method according to claim 8, wherein the system model takes into  
15 account:

hardware configuration of the IT infrastructure;

software applications supported on the IT infrastructure, their behavior and  
resources required by each application; and

manner in which the users of the IT infrastructure use the systems supported  
20 thereby.

10. The method according to claim 1, wherein the business model includes a business level model that allows the calculation of said IT metrics and is used to calculate the impacts of events at the IT level on the business objectives, as well as  
25 serving as inputs for computing an overall business metric, being a quantity that measures an overall alignment of the IT infrastructure with the business objectives.

11. The method according to claim 1, wherein the business level model includes at least one from the group including: gains from commissions, explicit  
30 penalties paid to customers whenever service level guarantees are violated,

customers deserting due to poor service, gaining new customers due to a good reputation, and losing customers due to poor reputation.

12. The method according to claim 1, wherein the business model allows  
5 calculation of an overall business metric that can be used to quantify the alignment of the IT with the business objectives.

13. The method according to claim 12, wherein the overall business metric is a total income generated by the IT infrastructure.

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14. The method according to claim 2, wherein a need to update the reference optimization of the IT business infrastructure and business level components is determined by statistical tests such as Chi-squared, when the measured business objectives are treated as an actual distribution, and the modeled business objectives  
15 are treated as an empirical distribution.

15. A computer implemented program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for optimizing an IT business infrastructure and business  
20 process parameters according to predetermined business objectives, the method comprising:

- (a) obtaining as input business objectives; and
- (b) optimizing the IT business infrastructure and/or business level components associated with the IT business infrastructure according to  
25 said business objectives.

16. A computer implemented computer program product comprising a computer useable medium having computer readable program code embodied therein for optimizing an IT business infrastructure and business process

parameters according to predetermined business objectives, the computer program product comprising:

computer readable program code for causing the computer to obtain as input business objectives; and

- 5            computer readable program code for causing the computer to optimize the IT business infrastructure and/or business level components associated with the IT business infrastructure according to said business objectives.

17.        A computer implemented method for optimizing performance of a business IT infrastructure according to pre-defined business objectives, the method comprising:

- 15            (a) comparing runtime performance of the business objectives achieved by the IT infrastructure with a reference optimization of the business objectives based on a business model incorporating pre-defined business rules determining how IT level metrics affect said business objectives; and
- (b) if a significant change is detected, updating the business model and re-determining the reference optimization of the business objectives.

20        18.        The method according to claim 17, including:

- (c) determining the runtime performance of said business objectives during runtime of the business IT infrastructure by monitoring the business IT infrastructure and the business objectives achieved by the business IT infrastructure.

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19.        The method according to claim 17, wherein the business objectives include a service level agreement between a service provider that provides a service and a service consumer, regarding some service level.

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**20.** The method according to claim 19, wherein the service level agreement has two numerical quantities associated therewith: a price paid by the service consumer to ensure the service level agreement, and a penalty paid by the service consumer whenever the agreement is violated.

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**21.** The method according to claim 19, wherein the business objectives include a contract relating to an obligation by or to an owner or user of the IT business infrastructure.

10 **22.** The method according to claim 17, wherein the business model includes a system user behavior model that models behavior of users of a business application running on the IT infrastructure.

**23.** The method according to claim 17, wherein the system user behavior  
15 model takes into account parameters such as the number of users, the types of users, and the manner in which each user uses the system.

**24.** The method according to claim 17, wherein the business model includes a  
20 system model that models hardware and software components of the IT infrastructure.

**25.** The method according to claim 24, wherein the system model takes into account:

hardware configuration of the IT infrastructure;

25 software applications supported on the IT infrastructure, their behavior and resources required by each application; and

manner in which the users of the IT infrastructure use the systems supported thereby.

26. The method according to claim 17, wherein the business model includes a business level model that allows the calculation of said IT metrics and is used to calculate the impacts of events at the IT level on the business objectives, as well as serving as inputs for computing an overall business metric, being a quantity that  
5 measures an overall alignment of the IT infrastructure with the business objectives.

27. The method according to claim 17, wherein the business level model includes at least one from the group including: gains from commissions, explicit penalties paid to customers whenever service level guarantees are violated,  
10 customers deserting due to poor service, gaining new customers due to a good reputation, and losing customers due to poor reputation.

28. The method according to claim 17, wherein the business model allows calculation of an overall business metric that can be used to quantify the alignment  
15 of the IT with the business objectives.

29. The method according to claim 28, wherein the overall business metric is a total income generated by the IT infrastructure.

20 30. The method according to claim 17, wherein significance of a change is defined by statistical tests such as Chi-squared, when the measured business objectives are treated as an actual distribution, and the modeled business objectives are treated as an empirical distribution.

25 31. A system for optimizing performance of a business IT infrastructure according to pre-defined business objectives, the system comprising:

a comparator for comparing runtime performance of the business objectives achieved by the IT infrastructure with a reference optimization of the business objectives based on a business model incorporating pre-defined business rules  
30 determining how IT level metrics affect said business objectives; and

an optimizer for updating the business model and re-determining the reference optimization of the business objectives if a significant change is detected.

5     **32.**     The system according to claim 31, comprising a modeling unit for defining the business model.

10     **33.**     The system according to claim 32, wherein the modeling unit includes a definitions unit that is coupled to the optimizer and creates an objectives definition that defines business objectives.

15     **34.**     The system according to claim 32, wherein the modeling unit includes a monitoring unit that monitors the performance of the IT infrastructure in respect of business objectives during runtime.

20     **35.**     The system according to claim 31, wherein the business model includes a set of actions/policies that can be changed by the optimizer.

25     **36.**     The system according to claim 32, wherein the modeling unit is coupled to an independent situation manager that establishes a situation upon occurrence of one or more events occurring during runtime of the business model on the IT infrastructure.

30     **37.**     A computer implemented program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for optimizing performance of a business IT infrastructure according to pre-defined business objectives, the method comprising:

- (a) comparing runtime performance of the business objectives achieved by the IT infrastructure with a reference optimization of the business objectives based on a business model incorporating pre-defined business

rules determining how IT level metrics affect said business objectives;  
and

- (b) if a significant change is detected, updating the business model and re-determining the reference optimization of the business objectives.

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**38.** A computer implemented computer program product comprising a computer useable medium having computer readable program code embodied therein for optimizing performance of a business IT infrastructure according to pre-defined business objectives, the computer program product comprising:

10 computer readable program code for causing the computer to compare runtime performance of the business objectives achieved by the IT infrastructure with a reference optimization of the business objectives based on a business model incorporating pre-defined business rules determining how IT level metrics affect said business objectives; and

15 computer readable program code for causing the computer to update the business model and re-determine the reference optimization of the business objectives, if a significant change is detected.